

Application No. 10/035,736

**REMARKS**

Claims 1 to 26 are pending in the application. Claims 1 to 26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gundlach et al. (U.S. Patent 6,054,505) in view of Vieira et al. (U.S. Patent 5,096,781). Claims 1 to 26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gundlach et al. (U.S. Patent 6,054,505) in view of WO 97/20000. Claims 1 to 26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gundlach et al. (U.S. Patent 6,054,505) in view of JP 50121178.

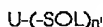
Applicants respectfully traverse the rejections of the claims. The present invention is directed to an ink composition comprising (a) water, (b) an anionic dye, (c) a polyquaternary amine compound, and (d) a quaternary ammonium substituted UV absorbing compound. Another embodiment of the present invention is directed to an ink composition comprising (a) water, (b) a complex of (i) an anionic dye and (ii) a polyquaternary amine compound, and (c) a quaternary ammonium substituted UV absorbing compound.

Gundlach et al. discloses an ink composition which comprises (1) water; (2) a nonpolymeric salt comprising at least one cation and at least one anion; and (3) a colorant comprising an anionic dye complexed with a polyquaternary amine compound. Also disclosed is an ink composition which comprises (1) water; (2) a nonpolymeric salt comprising at least one cation and at least one anion; (3) an anionic dye; and (4) a polyquaternary amine compound. In one embodiment, the polyquaternary amine compound is selected from the group consisting of polydiallyl ammonium compounds, polyquaternized

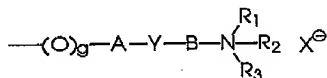
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polyvinylamines, polyquaternized polyallylamines, epichlorohydrin/amine copolymers, cationic amido amine copolymers, copolymers of vinyl pyrrolidinone and a vinyl imidazolium salt, and mixtures thereof.

Vieira et al. discloses compounds of the formula



in which  $n'$  is a number from 1 to 4,  $U$  is a radical of a UV absorber of the hydroxyphenylbenzotriazole, hydroxybenzophenone, cinnamic acid, or triazine type, and  $SOL$  is a group of the formula

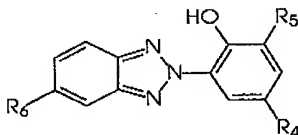


The symbols in the formula are as defined in claim 1. The compounds are suitable for use as light stabilizers, particularly for recording materials and inks for ink jet printing.

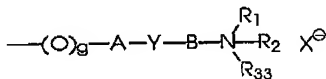
The Examiner has stated that Gundlach et al. discloses an ink comprising water, 0.1 to 40 percent nonpolymeric salt, 1 to 5 percent anionic dye, and 0.01 to 50 percent polyquaternary amine such as polydiallyl dimethyl ammonium, polyquaternized polyvinylamine, polyquaternized polyallylamine, epichlorohydrin/amine, cationic amido amine, and copolymers of vinyl pyrrolidone and vinyl imidazolium salt, that in one embodiment the anionic dye complexes with the polyquaternary amine, that the reference discloses that the ink is preferably printed using a thermal ink jet printer but also discloses the use of other conventionally known ink jet printing methods such as piezoelectric ink jet printing, that the difference between Gundlach et al.

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and the present claimed invention is the requirement in the claims of quaternary ammonium substituted UV absorbing compound, that Vieira et al., which is drawn to ink jet inks, discloses the use of 0.01 to 20 percent of a light stabilizer of the formula



which is identical to the quaternary ammonium substituted UV absorbing compound presently claimed when R<sub>6</sub> is hydrogen, R<sub>5</sub> is hydrogen, and R<sub>4</sub> is of the formula



wherein g is 0, A is an alkylene group, Y is a direct bond or C(O)NR<sub>1</sub> wherein R<sub>1</sub> is hydrogen, B is an alkylene group, and R<sub>1</sub>, R<sub>2</sub>, and R<sub>33</sub> are each hydrogen, alkoxy group, alkyl group, or aryl group, and that the motivation for using such light stabilizer is to impart lightfastness to the ink. The Examiner is of the position that in light of the motivation for using light stabilizer disclosed by Vieira et al., it would have been obvious to one of ordinary skill in the art to use such light stabilizer in the ink of Gundlach et al. to produce ink with excellent lightfastness, thereby arriving at the claimed invention.

Applicants disagree with this position. As the Examiner has stated, nothing in Gundlach teaches or suggests to one of ordinary

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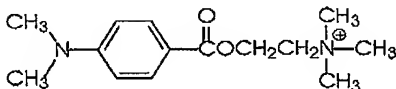
skill in the art an ink containing a quaternary ammonium substituted UV absorbing compound. In addition, the Examiner has failed to point to any teaching in Vieira et al. that would teach or suggest an aqueous ink composition containing a polyquaternary amine compound in addition to an anionic dye and a cationic lightfastness imparting agent. As stated in the instant specification at, for example, page 35, lines 10 to 17, "it is believed that the quaternary ammonium substituted UV absorbing compound would not be soluble or effective in an ink composition that did not contain the polyquaternary amine compound, and that the quaternary ammonium substituted UV absorbing compound would precipitate the anionic dye in such an ink. In inks of the present invention, however, the quaternary ammonium substituted UV absorbing compound is compatible with the other ink ingredients and enables images of desirable lightfastness to be generated." In contrast, as Vieira et al. states at column 17, lines 30 to 38, the compounds disclosed therein are believed to form a sparingly soluble salt with an anionic dye. The Examiner has pointed to nothing in these references, viewed in combination, that would lead one of ordinary skill in the art to combine the teachings thereof in the specific way in which the Examiner has done. "An analysis of obviousness of a claimed combination must include consideration of the results achieved by that combination." The Gillette Co. v. S. C. Johnson & Son Inc., 16 U.S.P.Q. 2d 1923, 1928 (Fed. Cir. 1990). Accordingly, Applicants are of the position that the Examiner has failed to establish a prima facie case of obviousness against the instant claims.

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The Examiner has also rejected claims 1 to 26 under §103 as being unpatentable over Gundlach et al. in view of WO 97/20000. WO 97/20000 discloses colorant stabilizers and a colorant composition which includes a colorant and a colorant stabilizer. The colorant stabilizer imparts light-stability to the colorant so that the colorant does not fade when exposed to electromagnetic radiation such as sunlight or artificial light. The colorants and stabilizers disclosed therein are useful for, among other applications, ink jet inks.

The Examiner has stated that Gundlach et al. discloses an ink comprising water, 0.1 to 40 percent nonpolymeric salt, 1 to 5 percent anionic dye, and 0.01 to 50 percent polyquaternary amine such as polydiallyl dimethyl ammonium, polyquaternized polyvinylamine, polyquaternized polyallylamine, epichlorohydrin/amine, cationic amido amine, and copolymers of vinyl pyrrolidone and vinyl imidazolium salt, that in one embodiment the anionic dye complexes with the polyquaternary amine, that the reference discloses that the ink is preferably printed using a thermal ink jet printer but also discloses the use of other conventionally known ink jet printing methods such as piezoelectric ink jet printing, that the difference between Gundlach et al. and the present claimed invention is the requirement in the claims of quaternary ammonium substituted UV absorbing compound, that WO 97/20000 discloses the use of 0.1 to 15 percent colorant stabilizer for ink jet inks wherein the stabilizer is of the formula

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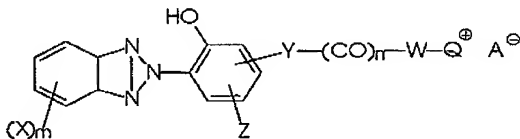
which is identical to the quaternary ammonium substituted UV absorbing compound presently claimed, i.e., choline chloride ester of dimethylaminobenzoic acid, and that the motivation for using such stabilizer is to prevent fading of the ink when exposed to light including sunlight. The Examiner is of the position that in light of the motivation for using stabilizer disclosed by WO 97/20000, it would have been obvious to one of ordinary skill in the art to use such stabilizer in the ink of Gundlach et al. to produce ink which will not fade upon exposure to light, thereby arriving at the claimed invention.

Applicants disagree with this position. As the Examiner has stated, nothing in Gundlach teaches or suggests to one of ordinary skill in the art an ink containing a quaternary ammonium substituted UV absorbing compound. In addition, the Examiner has failed to point to any teaching in WO 97/20000 that would teach or suggest an aqueous ink composition containing a polyquaternary amine compound in addition to an anionic dye and a cationic lightfastness imparting agent. As stated in the instant specification at, for example, page 35, lines 10 to 17, "it is believed that the quaternary ammonium substituted UV absorbing compound would not be soluble or effective in an ink composition that did not contain the polyquaternary amine compound, and that the quaternary ammonium substituted UV absorbing compound would precipitate the anionic dye in such an ink. In inks of

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the present invention, however, the quaternary ammonium substituted UV absorbing compound is compatible with the other ink ingredients and enables images of desirable lightfastness to be generated." The Examiner has pointed to nothing in these references, viewed in combination, that would lead one of ordinary skill in the art to combine the teachings thereof in the specific way in which the Examiner has done. "An analysis of obviousness of a claimed combination must include consideration of the results achieved by that combination." The Gillette Co. v. S. C. Johnson & Son Inc., 16 U.S.P.Q. 2d 1923, 1928 (Fed. Clr. 1990). Accordingly, Applicants are of the position that the Examiner has failed to establish a prima facie case of obviousness against the instant claims.

The Examiner has also rejected claims 1 to 26 under §103 as being unpatentable over Gundlach et al. In view of JP 50121178. JP 50121178 discloses ultraviolet light-absorbing agents which are cationic benzotriazoles of the formula



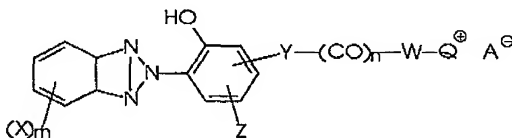
wherein X is H, halogen, or alkoxy, Y is direct linkage, O, or NR (R=H, alkyl, cyclohexyl, or benzyl), W is alkylene, alkenylene, aralkylene, phenylene, or heteroalkylene, and containing O, NR, NRCO, or COO, Z is H, halogen, or alkyl, Q<sup>+</sup> is a quaternary ammonium group, A is an anion, m=1 or 2, and n=0 or 1. Compounds of this formula prevented the sensitivity of

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organic compounds in various products such as cosmetics, fibers, food, and the like. A cosmetic was prepared containing one of the compounds.

The Examiner has stated that Gundlach et al. discloses an ink comprising water, 0.1 to 40 percent nonpolymeric salt, 1 to 5 percent anionic dye, and 0.01 to 50 percent polyquaternary amine such as polydiallyl dimethyl ammonium, polyquaternized polyvinylamine, polyquaternized polyallylamine, epichlorohydrin/amine, cationic amido amine, and copolymers of vinyl pyrrolidone and vinyl imidazolium salt, that in one embodiment the anionic dye complexes with the polyquaternary amine, that the reference discloses that the ink is preferably printed using a thermal ink jet printer but also discloses the use of other conventionally known ink jet printing methods such as piezoelectric ink jet printing, that the difference between Gundlach et al. and the present claimed invention is the requirement in the claims of quaternary ammonium substituted UV absorbing compound, that pending translation JP 50121178 discloses UV light absorbing agents of the formula



which is identical to the quaternary ammonium substituted UV absorbing compound presently claimed when n is 0, X is hydrogen, Z is hydrogen, Y is direct bond, W is alkylene group or  $\text{CH}_2\text{H}_4\text{CONHC}_2\text{H}_4$  (sic), and Q is



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$N(CH_3)_3$ , or when  $n$  is 1,  $X$  is hydrogen,  $Z$  is hydrogen,  $Y$  is direct bond,  $W$  is  $NHC_3H_6$ , and  $Q$  is  $N(CH_3)_3$ , and that the motivation for using such compound is to impart lightfastness. The Examiner is of the position that in light of the motivation for using light stabilizer disclosed by JP 50121178, it would have been obvious to one of ordinary skill in the art to use such light stabilizer in the ink of Gundlach et al. to produce ink with excellent lightfastness, thereby arriving at the claimed invention.

Applicants disagree with this position. As the Examiner has stated, nothing in Gundlach teaches or suggests to one of ordinary skill in the art an ink containing a quaternary ammonium substituted UV absorbing compound. In addition, the Examiner has failed to point to any teaching in JP 50121178 that would teach or suggest an aqueous ink composition containing a polyquaternary amine compound in addition to an anionic dye and a cationic lightfastness imparting agent. As stated in the instant specification at, for example, page 35, lines 10 to 17, "it is believed that the quaternary ammonium substituted UV absorbing compound would not be soluble or effective in an ink composition that did not contain the polyquaternary amine compound, and that the quaternary ammonium substituted UV absorbing compound would precipitate the anionic dye in such an ink. In inks of the present invention, however, the quaternary ammonium substituted UV absorbing compound is compatible with the other ink ingredients and enables images of desirable lightfastness to be generated." The Examiner has pointed to nothing in these references, viewed in combination, that would lead one of ordinary skill in the art to combine the teachings thereof in the specific way in which the Examiner has done. "An analysis

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of obviousness of a claimed combination must include consideration of the results achieved by that combination." The Gillette Co. v. S. C. Johnson & Son Inc., 16 U.S.P.Q. 2d 1923, 1928 (Fed. Cir. 1990). Accordingly, Applicants are of the position that the Examiner has failed to establish a prima facie case of obviousness against the instant claims.

For each of the above grounds of rejection, the Examiner appears to have considered various portions of the references cited, in each instance viewing the cited portion in isolation from the context of the entire reference, and combined these isolated portions to arrive at the present invention with the benefit of hindsight. Using hindsight or applying the benefit of the teachings of the present application when determining obviousness, however, is impermissible; the references applied must be reviewed without hindsight, must be reviewed as a whole, and must suggest the desirability of combining the references. Lindemann Maschinenfabrik v. American Holst & Derrick Co., 221 U.S.P.Q. 481 (Fed. Cir. 1984). Most if not all inventions arise from a combination of old elements. See In re Rouffet, 149 F.3d 1350, 1357, 47 U.S.P.Q.2D (BNA) 1453, 1457 (Fed. Cir. 1998). Thus, every element of a claimed invention may often be found in the prior art. See id. However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. See id. None of the cited references suggests or teaches the desirability of combining the elements of the present invention as claimed. Obviousness cannot be established by combining references to arrive at the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. In re Geiger, 2 U.S.P.Q. 2d 1276 (Fed. Cir. 1987); Carella v.

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Starlight Archery and Pro Line Co., 804 F.2d 135, 231 U.S.P.Q. 644 (Fed. Cir. 1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 221 U.S.P.Q. (BNA) 929 (Fed. Cir. 1984). When prior art references require selective combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself. Uniroyal Inc. v. Rudkin Wiley Corp., \_\_\_ F. 2d \_\_\_, 5 U.S.P.Q. 2d 1435 (Fed. Cir. 1988); Interconnect Planning Corp. v. Feil, 774 F. 2d 1132, 227 U.S.P.Q. 543 (Fed. Cir. 1985). It is impermissible to use the claims as a frame and the prior art references as a mosaic to piece together a facsimile of the claimed invention. Uniroyal Inc. v. Rudkin Wiley Corp., \_\_\_ F. 2d \_\_\_, 5 U.S.P.Q. 2d 1435 (Fed. Cir. 1988); W. L. Gore and Associates, Inc. v. Garlock, Inc., 721 F. 2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983). The PTO has the burden under section 103 to establish a prima facie case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. In re Fine, 5 U.S.P.Q. 2d 1596 (Fed. Cir. 1988). The Examiner is using Applicants' disclosure as a recipe for selecting the appropriate portions of the prior art to construct Applicants' ink. A piecemeal reconstruction of the prior art patents in light of Appellant's disclosure is not a basis for a holding of obviousness. In re Kamm et al., 172 U.S.P.Q. 298 (C.C.P.A. 1972).

The Examiner may be of the position that the invention claimed in the present application would be obvious to try after reviewing the cited references. Obvious to try, however, is not the standard by which obviousness is determined under 35 U.S.C. §103. In re

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Geiger, 2 U.S.P.Q. 2d 1276 (Fed. Cir. 1987); In re Yates, 211 U.S.P.Q. 1149 (CCPA 1981); In re Goodwin, 576 F.2d 375, 198 U.S.P.Q. 1 (CCPA 1978).

Applicants direct attention to the decision in In re Geiger, 2 U.S.P.Q. 2d 1276 (Fed. Cir. 1987). In this case, the invention was a method of inhibiting scale formation on and corrosion of metallic parts in cooling water systems by use of compositions containing (1) a sulfonated styrene/maleic anhydride (SSMA) copolymer, (2) a water soluble zinc compound, and (3) an organo-phosphorus acid compound or water soluble salt thereof. The Federal Circuit discussed three references cited against the claimed invention. The first, li, disclosed use in cooling water systems of scale and corrosion prevention compositions comprising a polymeric component in combination with one or more compounds selected from the group consisting of inorganic phosphoric acids and water soluble salts thereof, phosphonic acids and water soluble salts thereof, organic phosphoric acid esters and water soluble salts thereof, and polyvalent metal salts; the li polymeric component could contain maleic acid and styrene monomers, but there was no disclosure of the specific copolymer SSMA required in Geiger's claims. The second reference, Snyder '733, disclosed a method for treating cooling water systems prone to scale formation by the addition of a composition comprising an acrylic acid/lower alkyl/hydroxy acrylate copolymer and another polymeric component, which could be SSMA or a styrene/maleic anhydride copolymer; this reference noted that boiler and cooling water systems share a common problem in regard to scale deposit formation and that use of a styrene/maleic anhydride copolymer to prevent scale in boiler water systems was known. The third

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reference, Hwa, disclosed a method for treating boiler water systems that are prone to scale formation by addition of a composition comprising SSMA and an organo-phosphorus acid component. The Board had held that, based upon the prior art and the fact that each of the three components of the composition used in the claimed method were conventionally employed in the art for treating cooling water systems, it would have been prima facie obvious, within the meaning of 35 U.S.C. §103, to employ these components in combination for their known functions and to optimize the amount of each additive. The Federal Circuit reversed, stating that it did not suggest use of SSMA as its claimed polymeric component and did not require the presence of an organophosphorus acid compound or a zinc compound, that although Snyder '733 disclosed the use of SSMA, it was for the purpose of showing that it, or one of three other specifically recited copolymers, could be used in combination with yet another polymeric component to prevent scale formation, and that while Hwa did disclose the specifically-recited organophosphorus acid compound, it provided no suggestion to add a zinc compound to its disclosed combination of SSMA and organophosphorus acid compounds, or to use SSMA in combination with an organophosphorus acid compound in the treatment of a cooling water system, where the characteristics could differ significantly from those in Hwa's boiler water system. The court concluded, "At best, in view of these disclosures, one skilled in the art might find it obvious to try various combinations of these known scale and corrosion prevention agents. However, this is not the standard of 35 U.S.C. §103."

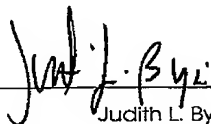
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Applicants are of the position that the fact situation in In re Gelger is similar to that currently at issue. At best, the combination of references cited by the Examiner in the various rejections might suggest that the instant invention might be obvious to try; such an establishment, however, would still fall short of the requirements for a prima facie case of obviousness.

Applicants believe that the foregoing distinctions place the claims in condition for allowance, and accordingly respectfully request reconsideration and withdrawal of all grounds for rejection.

In the event the Examiner considers personal contact advantageous to the disposition of this case, she is hereby authorized to call Applicant(s) attorney, Judith L. Byorick, at Telephone Number (585) 423-4564, Rochester, New York.

Respectfully submitted,



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